

REMARKS

Applicants hereby amend the specification and drawings, cancel claims 10-13 and 15-16, and add new claims 17-29. Applicants reserve the right to pursue the subject matter of cancelled claims 10-13 and 15-16 in the future in this or another patent application. New independent claims 17, 28, and 29 recite bone anchor insertion devices comprising a handle, a hook-shaped shaft, and a bone anchor mount. Support for claims 17, 28, and 29 can be found at least at page 8, line 10, to page 9, line 18, and FIG. 6 of the originally filed application. Support for new dependent claims 18-27 can be found at least at page 5, line 1, to page 8, line 9, FIGS. 1-5, and claims 1-8 of the originally-filed application. Applicants submit that no new matter has been entered thereby.

Upon entry of this paper, claims 17-29 will be pending, with claims 17, 28, and 29 being the only independent claims.

Objections

FIG. 2 is amended to indicate the correct reference character (i.e., 14) with respect to the generally cone-shaped head. Approval of the proposed change is respectfully requested.

The second full paragraph on page 6 is amended to indicate the correct reference character (i.e., 26) with respect to the cutting edges in FIGS. 3 and 4.

The last paragraph on page 6, the first and second full paragraphs on page 7, and last paragraph on page 7 are amended to indicate the correct reference character (i.e., 38) with respect to the eyelet and the correct reference character (i.e., 32) with respect to the bevel portion of the eyelet in FIG. 5.

Rejections

Claims 10-12 and 15-16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,527,342 to Pietrzak et al. (hereinafter “Pietrzak”) in view of U.S. Patent No. 5,522,817 to Sander et al. (hereinafter “Sander”) and U.S. Patent No. 5,725,541 to Anspach, III et al. (hereinafter “Anspach, III”). Claim 13 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Pietrzak in view of Sander and Anspach, III, and further in view of U.S. Patent No. 5,697,931 to Thompson (hereinafter “Thompson”). Claims 10-13 and 15-16 are cancelled, rendering the rejections moot with respect to these claims. Applicants address these rejections with respect to new independent claims 17, 28, and 29, and submit that the now-pending claims (i.e., claims 17-29) are patentable.

New independent claims 17, 28, and 29 recite bone anchor insertion devices comprising a handle, a hook-shaped shaft, and a bone anchor mount. Applicants respectfully submit that neither Pietrzak, nor Sander, nor Anspach, III, nor Thompson, alone or in proper combination, teach or suggest a bone anchor insertion device comprising a handle, a hook-shaped shaft, and a bone anchor mount.

Pietrzak describes an apparatus for implanting a bone anchor comprising a plastic handle portion and a metallic driver stem (col. 6, lines 28-31, of Pietrzak). The metallic driver stem in Pietrzak is straight (FIGS. 9-11 and 13-15). Nowhere does Pietrzak teach or suggest a bone anchor insertion device comprising a hook-shaped shaft.

Sander, Anspach, III, and Thompson fail to cure the deficiencies of Pietrzak. Specifically, Sander describes a surgical fastener for bone or hard tissue (col. 2, lines 9-10, of Sander) and a pusher 110 for applying a staple to bone or hard tissue (col. 4, lines 22-31, and

FIG. 1E). Nowhere does Sander teach or suggest a bone anchor insertion device comprising a hook-shaped shaft. Anspach, III describes a device for fastening soft tissue to bone (col. 3, lines 61-62, of Anspach, III) and a cylindrical rod 5 and a thrust adapter tube 8 for placing the device (col. 5, lines 6-9). The rod 5 and the tube 8 in Anspach, III are both straight (FIGS. 1-6 and 9). Nowhere does Anspach, III teach or suggest a bone anchor insertion device comprising a hook-shaped shaft. Thompson describes an anchor insertion tool for inserting a bone anchor into a bone (col. 14, lines 21-27, of Thompson). The anchor insertion tool comprises a rigid elongate member 50 (col. 14, lines 28-29) that is straight (FIGS. 8-10). Nowhere does Thompson teach or suggest a bone anchor insertion device comprising a hook-shaped shaft.

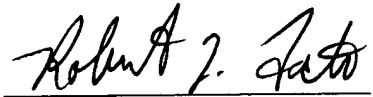
Pietrzak, Sander, Anspach, III, and Thompson all fail to teach or suggest a device comprising a hook-shaped shaft. Therefore, this element would still be missing if any or all of the references were combined.

Applicants thus submit that independent claims 17, 28, and 29, and dependent claims 18-27 are patentable over Pietrzak, Sander, Anspach, III, and Thompson. Accordingly, Applicants respectfully request allowance of these claims.

CONCLUSION

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of all grounds of objection and rejection, and allowance of claims 17-29 in due course. The Examiner is invited to contact Applicants' undersigned representative by telephone at the number listed below to discuss any outstanding issues.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Robert J. Tosti", is written over a horizontal line.

Date: May 28, 2003

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MARKED UP VERSION OF AMENDMENTS

Page 6, second full paragraph:

In other embodiments such as that shown in Figures 3 and 4, the cutting edges ~~2616~~ on the bone anchor 22 are defined by flat surfaces 23 formed in the anchor 22. The flat surfaces 23 are cut into the generally cone-shaped head 14. The flat surfaces 23 extend generally from the wide end 18 to the narrow end 19 of the generally cone-shaped head 14.

Page 6, last paragraph:

Another embodiment of a bone anchor according to the invention is illustrated in Figure 5. The bone anchor 22 of Figure 5 comprises a generally cone-shaped head 14 which is able to pierce and securely engage bone. The generally cone-shaped head 14 is coupled to a shaft portion 16 with an oval eyelet ~~3818~~ therethrough for receiving and holding one or more suture strands. To retain the generally cone-shaped head 14 within the bone, the bone anchor 22 further comprises a collar member 20. The collar member 20 is used for retaining the bone anchor 22 in place, once it has been driven into the bone, by lodging within the bone in a manner to resist removal of the bone anchor 22.

Page 7, first and second full paragraphs:

The shaft portion 16 of the bone anchor 22 is generally cylindrical in shape and has the eyelet ~~3818~~, or bore, formed radially therethrough proximate one of its ends. The eyelet ~~3818~~ may be oval, round, or other suitable shape and is of a sufficient size to permit one or more suture strands to pass therethrough. The circumference of each outer end of the eyelet ~~3818~~ is chamfered or grounded to provide a bevel portion ~~3222~~. It should be appreciated that the bevel portion ~~3222~~ provides a generally smooth surface for contacting suture strand which has been passed through the eyelet ~~3818~~. The eyelet ~~3818~~ is located on the shaft portion 16 of the bone anchor 22 such that the transverse axis of the eyelet ~~3818~~ intersects the longitudinal axis of the bone anchor 22.

The generally cone-shaped head 14 of the bone anchor 22 is located at an end of the shaft portion 16 opposite the end having the eyelet ~~3818~~. The apex of the generally cone-shaped head 14 is a point 24 which is suitable for piercing and being driven into bone. The diameter of the generally cone-shaped head 14 increases along a longitudinal direction from the point 24 towards the eyelet ~~3818~~.

Page 7, last paragraph:

The collar member 20 is rotatably fitted over the shaft portion 16 to form the assembled bone anchor 22 as shown in Figure 5. While there is no need to permanently secure the collar member 20 to the generally cone-shaped head 14, the collar member 20 may nevertheless be securely attached to the generally cone-shaped head 14. It will be appreciated, however, that by permitting the generally cone-shaped head 14 to rotate freely with respect to collar member 20, a suture strand can be rotated by the surgeon after implantation to a position where the forces acting on the suture strand by the bone anchor 22 are more evenly distributed around the region of the shaft portion 16 adjacent to the eyelet ~~3818~~.

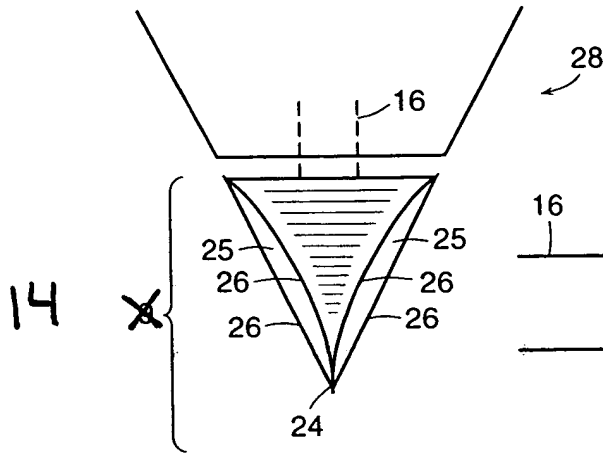


FIG. 2

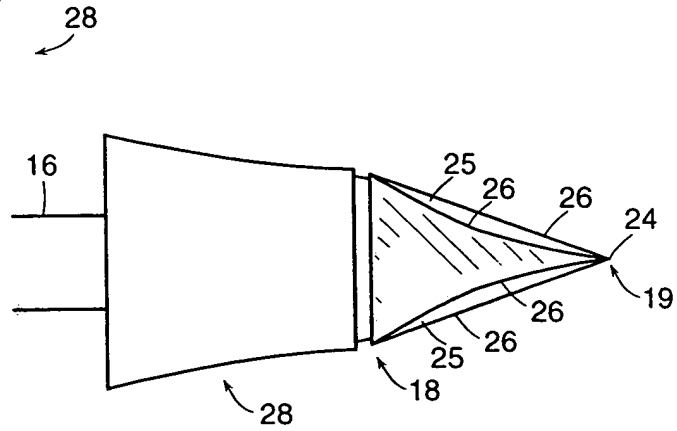


FIG. 1

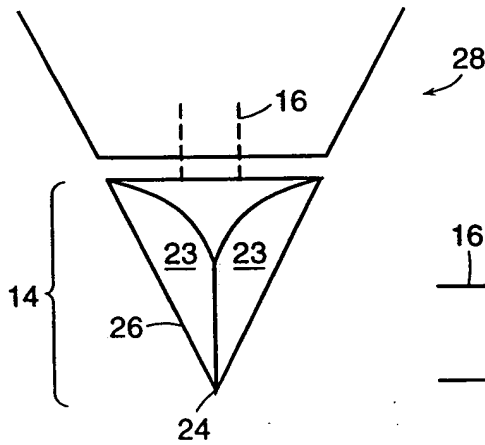


FIG. 4

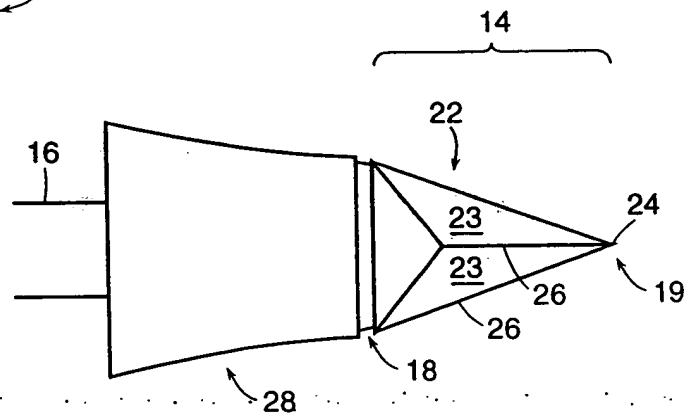


FIG. 3